

CLAIMS

1. A solution of a polyketone as a copolymer of carbon monoxide and one or more olefins, wherein 90 wt% or more of said copolymer comprises carbon monoxide units and olefin units, and a solvent is an aqueous solution of at least one member selected from the group consisting of zinc salts, calcium salts, thiocyanates and iron salts.

2. A solution according to claim 1, wherein the concentration of the zinc salt(s), calcium salt(s), thiocyanate(s) and/or iron salt(s) in said solvent is 5 to 85 wt%, and the polymer concentration is 0.005 to 70 wt%.

3. A solution according to claim 1 or 2, wherein the anion portion of each of the zinc salt(s), calcium salt(s) and/or iron salt(s) is a halogen.

4. A solution according to any one of claims 1 to 3, wherein said polyketone comprises an alternating copolymer of carbon monoxide and one or more olefins.

5. A solution of a polyketone as an alternating copolymer of carbon monoxide and one or more olefins, wherein 90 wt% or more of said alternating copolymer comprises carbon monoxide units and olefin units, and a solvent is an aqueous solution containing at least one zinc halide and at least one metal salt which is other than said zinc halide(s) and is soluble in water at 50°C in a proportion of 1 wt% or more.

6. A solution according to claim 5, wherein said

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metal salt(s) is an alkali metal halide and/or an alkaline earth metal halide, and the polyketone concentration is 0.005 to 70 wt%.

7. A solution according to claim 6, wherein the weight ratio of the at least one zinc halide to the alkali metal halide and/or alkaline earth metal halide is 98/2 to 20/80, and the concentration of the zinc halide(s) in the solvent is 5 to 75 wt%.

8. A process for producing polyketone fiber which comprises extruding a polyketone solution according to any one of claims 1 to 7 through a spinneret to obtain a fibrous material, removing a portion or the whole of the salt(s) used in the solvent from the fibrous material, and then stretching the fibrous material in a temperature range of 0 to 300°C to produce fiber.

9. A process for producing polyketone fiber which comprises extruding a polyketone solution according to any one of claims 1 to 7 through a spinneret; passing the fibrous material obtained by the extrusion through a coagulation bath comprising 50 wt% or more of water; if necessary, washing the fibrous material with water or an aqueous solution of pH 4 or lower to reduce the total content in the fibrous material of at least one element selected for use from the group consisting of zinc, calcium and iron, to 10,000 ppm or less; drying the fibrous material at a temperature of 50°C or higher to remove a portion or the whole of the water

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from the fibrous material; and then stretching the fibrous material at a ratio of 3 or more at a temperature of 50°C or higher.

10. A production process according to claim 9, wherein said coagulation bath is an aqueous solution containing one or more salts in a concentration lower than that in the aqueous solution used as a solvent for the polyketone.

11. A production process according to any one of claims 9 and 10, wherein the temperature of said coagulation bath and/or the temperature of said aqueous solution used for the washing if necessary are 50 to 95°C.

12. A process for producing polyketone fiber according to any one of claims 9 to 11, wherein the coagulation bath containing at least 1 ppm of the salt(s) used in the solvent for the polyketone and removed from the fibrous material, and a portion or the whole of the water or the aqueous solution having a pH of 4 or lower, which is used if necessary, are concentrated; the same salt(s) used in the solvent for the polyketone is freshly added to the concentrated aqueous solution if necessary; and the thus obtained aqueous solution is recycled to be reused as a solvent for the polyketone.

13. A polyketone fiber produced by a production process according to any one of claims 8 to 12.

14. A polyketone fiber comprising an alternating

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copolymer of carbon monoxide and one or more olefins, wherein 90 wt% or more of said alternating copolymer comprises carbon monoxide units and olefin units, and the total content in said fiber of at least one element selected for use from the group consisting of palladium, nickel and cobalt is 100 ppm or less.

15. A polyketone fiber according to claim 14, wherein the total content in the fiber of at least one element selected for use from the group consisting of zinc, calcium and iron is 10,000 ppm or less.

16. A polyketone fiber comprising an alternating copolymer of carbon monoxide and one or more olefins, which has a storage elastic modulus at 180°C of 80 g/d or more in the measurement of dynamic viscoelasticity at a frequency of 110 Hz.

17. A tire cord characterized by using a polyketone fiber according to any one of claims 13 to 16 in a proportion of at least 50 wt%.

18. A fiber-reinforced composite material wherein 1 wt% or more of fibers used is a polyketone fiber according to any one of claims 13 to 16.

19. A fiber-reinforced composite material according to claim 18, which is a tire, a belt or a building material.

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ADD AS (p. 52 → Industrial Applicability)

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